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TRANSLATIONS ON TELECOMMUNICATIONS POLICY,
RESEARCH AND DEVELOPMENT
(FOUO 6/79)

WORLD

WIDE

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TRANSLATIONS ON TELECOMMUNICATIONS POLICY,
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JAPAN

RELAXATION OF BAN ON MESSAGE SWITCHING COPYRIGHT ANNOUNCED

Tokyo NIKKAN KOGYO SHINBUN in Japanese 12 Dec 78 p 1

[Text] According to a release of 11 November the Ministry of Posts and Telecommunications (MPT) decided on a policy to greatly relax the ban on message switching which had previously hindered the joint construction of on-line networks. This means that in the Data Communication Promotion Law bill which MPT plans to present to the next regular session of the Diet, message switching will be classified into two categories:

(1) that which is associated with data processing, and (2) that which is conducted as a business. The message switching which is associated with data processing will be permitted. When this is realized, the construction of large scale networks--for instance, on-line tie-up of city banks--will be facilitated and communication circuit costs will be reduced; furthermore, duplicate investment in electronic computer facilities can be avoided, and the spread of on-line systems in Japan, which was hitherto handicapped under the Public Electrocommunication Law, will be given an additional boost.

With rapid progress in the construction of on-line systems accompanying the more intensive use of computers, it becomes imperative for these on-line systems to have access to communication circuits. There are two types of circuits in use--the public communication circuits and the special communication circuits. Currently, those used principally by city banks and individual businesses for company on-line networks are special communication circuits. In the case of special communication circuits primarily for

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company use where electronic computers are used and data without any change in content are transmitted, so-called message switching also becomes possible.

However, as in the cases of horizontal on-line tie-up of city banks or the tie-up between different types of financial institutions, in concepts which are now being considered, where more than two parties (firms) of different contractual constituency make joint use of a special communication circuit, absolutely no switching is allowed. On the other hand, although certain parties, who can make joint use of special communication circuits, do have recourse to individual case approval by the MPT, operation is still severely restricted by Article 55-11 of the Public Electromunication Law and Article 4-13 of the Administration Regulations of the same law.

The reason message switching is forbidden to this type of joint use and to businesses dealing in computational work, such as computer centers, which make third-party use of special communication circuits, is that such message switching conducts no data processing and is therefore considered communication business. According to Articles 1, 2, and 5-2 of the Public Electromunication Law, all domestic and international electromunications are defined by law to be the exclusive businesses of the Dendenkosha (Nippon Telegraph and Telephone Corporation) and ITT, respectively.

The Data Communication Council (president--Tadao Saito, professor of Tokyo University) pointed out last fall that the banning of message switching in data communication, on the grounds that it is the exclusive domain of the public electromunication industry, was a mistake resulting from consideration of the function of only a part of the data communication medium. It was also pointed out that electronic computer users, who desire free use of communication circuits, have also strongly protested that the Public Electromunication Law is one of the worst laws in existence.

Under such circumstances, the MPT, in response to technical developments in communication circuit utilization, have, following the addition of a chapter (Chapter 3-4) on data communication to the basic law on data communication, namely the Public Electromunication Law (enacted in 1953), concerned mainly with the telephone and telegraph businesses, drafted a currently significant Data Communication Promotion Law bill which determines the need to expand the realm of joint utilization and to relax the restrictions on message switching.

Even with this measure, however, although necessary switching accompanying data processing will be permitted--for example, the transmittal of data input from cash dispenser terminals of financial institutions via joint use circuits to the electronic computer at a depositor's bank--there will still be strict restrictions as usual on message switching in the case of added-value communication businesses, where message switching almost amounts to a subleasing operation.

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In the background of this relaxation on message switching by MPT, it is believed there was some impetus from the increasing use of advanced data communication technology equipment such as used on coming facsimile networks which do not fit into the concept of data processing as consider in the Public Electrocommunication Law.

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JAPAN

TRIAL MANUFACTURE OF NEW MAGNETIC DISC MEDIUM NOTED

Tokyo NIKKEI ELECTRONICS in Japanese 13 Nov 78 p 85

[Article: "Trial Manufacture By Sputtering of Magnetic Disc Medium With 25,000 BPI Recording Density"]

[Text] Dendenkosha's Ibaraki Electrocommunications Laboratory and the Fujitsu Research Laboratory have jointly test produced a high recording density magnetic disc medium with a recording density (D_{50}) of 25,000 BPI (Uattori et al, SHINGAKU GIHO (Comm.Sc.Tech.Rpt), CPM-78-44).

This magnetic disc medium is a uniform thin film of gamma-ferric oxide formed on an alumite-treated aluminum alloy disc by means of reaction sputtering. Samples were made by two possible manufacturing processes: One an indirect oxidation method consisting of first forming alpha- Fe_2O_3 by sputtering in a strongly oxidizing atmosphere, then reduction by hydrogen to Fe_3O_4 , and final oxidation in air to gamma- Fe_2O_3 ; the other, a direct oxidation method where the hydrogen reduction stage is not required. The magnetic film formed by the sputtering is chemically stable and strongly abrasion resistant such that, similar to the painted film disc, it can be used without a protective surface coating, and it is known for its superior magnetic characteristics. The test disc medium made in this case had a medium thickness of 0.14 to 0.25 micrometers (compared to 1 to 1.5 micrometers for type 3336-11 painted medium), a residual magnetic flux density of 2500 gauss (compared to 650 gauss), a coercive force of 600 to 800 oersted (compared to 330 oersted), and a square-shape ratio of 0.80 (0.75). Recording density is 940 to 1100 FRPM and reproduced power is 0.85 mV p-p with a core width of 25 micrometers, 24 coil turns, and relative speed of 30 meters per second.

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INTER-AFRICAN AFFAIRS

BRIEFS

PANAFTEL NETWORK--Experts recently completed a study of the problems plaguing installation of the Pan-African Telecommunications System (PANAFTEL) linking the 16 member countries of CEDEAO (West African States Economic Community). The Nigerian news agency NAN reports that thus far four countries--Nigeria, Liberia, Gambia, and Upper Volta--have completed work on the part of their systems that provides the link-up with their neighbors. According to NAN, the most serious problems confronting the other CEDEAO countries are a shortage of funds and a lack of qualified technical personnel. The experts submitted their report to CEDEAO headquarters in Lagos on 7 March. It will be examined at the next CEDEAO summit conference in Dakar in May. [Text] [Paris MARCHES TROPICAUX ET MEDITERRANEENS in French 16 Mar 79 p 686] 8041

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IVORY COAST

NEW GROUP TV RECEIVER DEVELOPED, DEMONSTRATED

Paris MARCHES TROPICAUX ET MEDITERRANEENS in French 16 Mar 79 p 691

[Article: "New Audiovisual Receiver for Group Television Reception"]

[Text] The African Television Company (CATEL) of Abidjan and the Yves Houssin Agency of Paris have jointly demonstrated their audiovisual receiver for collective or group television reception to the French Ministry of Cooperation and the Television Broadcasting Company of France.

Development of this new product was financed in part by a loan from the Aid and Cooperation Fund. This project's objective was to reduce power consumption to a minimum while utilizing a high-reliability technology. Actually this development project is part of the research conducted to lower the costs of group television reception, particularly when used for educational purposes.

This was a working demonstration of the equipment. A series of measurements made during its operation showed that the receiver consumed less than 20 watts of power regardless of any variations in operating voltage. The receiver includes a 61-centimeter screen and has low-frequency power in excess of 3 watts. Its power can be supplied from different alternating current or direct current sources. It is obvious, however, that solar energy would be highly suitable for this equipment destined for Third World use.

It should be noted that this receiver can hardly be classed as an item for "general public" use. As a matter of fact, in many respects it falls into the "professional" use category. The African Television Company's broad experience in maintenance matters contributed greatly to making this receiver an extremely practical and efficient item of equipment in all respects.

By next year, Ivory Coast and Niger will have completed their group television reception infrastructure. In this connection, it should be recalled that these two countries have long recognized it was essential to attach equal importance to transmission networks and receiving networks. As a result,

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CATEL has already installed and currently maintains more than 15,000 group reception units in Ivory Coast. In Niger, to complete an initial educational network of 122 classrooms, approximately 300 reception units have been ordered from CATEL and the Yves Houssin Agency who will use more than 10 kilowatts of photovoltaic cells to operate the television sets.

Incidentally, Amadou Thiam, the Ivorian minister of information, was in Paris in February. There he reviewed certain projects connected with the Ivory Coast's large-scale audiovisual equipment program.

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TUNISIA

BRIEFS

SAT CONTRACT--The Tunisian PTT [Postal, Telephone, and Telegraph Service] recently awarded the [French] Telecommunications Corporation (SAT) a 12-million franc contract covering installation of composite-cable equipment in the northern and southern suburbs of Tunis, low-capacity radio relay communications links, as well as low-frequency automatic carrier-current communications links throughout the country. [Text] [Paris MARCHES TROPICAUX ET MEDITERRANEENS in French 9 Mar 79 p 622] 8041

NEW DP CENTER--Sometime in the latter half of March, Tunisian Prime Minister Hedi Nouira will inaugurate the National Automatic Data Processing Center's subordinate Interoffice Data Processing Center (CIATI). This new computer center has very extensive capabilities that will be available to most government offices and national firms. The CIATI will not only offer them the services of its new computer and its skilled personnel, it will also enable them to familiarize themselves with a computer center's operating and management techniques and thus prepare themselves, under ideal conditions, to eventually assume full control of their own systems. [Text] [Paris MARCHES TROPICAUX ET MEDITERRANEENS in French 16 Mar 79 p 682] 8041

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FRANCE

TELECOM-1 SATELLITE TO BEGIN OPERATING IN 1983

Paris AIR & COSMOS in French 10 Mar 79 pp 33-35

[Article by Pierre Langereux]

[Text] The decision of the French government to begin operating the first national satellite telecommunications system, Telecom-1, on 1 July 1983, which was made at a restricted Cabinet meeting at the Elysee on 20 February 1979 (cf AIR & COSMOS No 754) should in principle have been confirmed by the full Cabinet on 7 March.

This was to happen at the very time when the Telecom-1 system was one of the main centers of attraction at the international colloquium organized in Toulouse by CNES [National Center for Space Studies], DGT [General Telecommunications Directorate], and TDF [French Telecommunications Company], on the subject of "Space Telecommunications and Direct Television Broadcasting by Satellite." The other, equally important topical subject was precisely the French plan for a direct television satellite, TDF-1, which will be the subject of a government decision next month, at the time of a consultation with Germany (cf AIR & COSMOS No 756).

A Profitable System

Why a French telecommunications satellite?

The French data transmission network, which was already very dense, experienced considerable growth (more than 30 percent per year) from 1972 to 1976, and this growth is still continuing, although at a somewhat slower rate (27 percent in 1977). This is mainly an analog network; the proportion of digitization is still only 10 percent, but the growth in digital connections is extremely high (50 percent). Electronic communication is rapidly being introduced in the French telephone network, the Transpac network has been in operation since the end of 1978, and the first connections in the new Transmic numerical data transmission network will be put into operation this year. Under these circumstances, one might question the advantage of a new system of data distribution by satellite -- especially if one assumes that the satellites could represent only a marginal transmission capacity in comparison with that of the existing ground-based systems in our country.

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It was even said in the past that a country like France (this had been said on the scale of Europe) was geographically too limited in extent to make such a system really profitable, Herve Nora, head of the New Products and Services section of the DGT, correctly recalled at the Toulouse colloquium.

In fact, Herve Nora said, the DGT studies and the report drawn up by Yves Cannac, president of the Havas Bureau, at the request of the French government, showed that the Telecom-1 system is profitable and essential for the development in France of new telecommunications services making extensive use of "telematics" -- an application that Simon Nora and Alain Minc have defined as the "association of telecommunications satellites with ground-based data-transmission networks" in their report on "Data Transmission in Society," which was submitted to the government last year. For his part, Gerard Thery, director general for telecommunications, also recognizes that "the use of data transmission in society is connected with the great development of telecommunications, of which satellites are one of the essential components, along with other transmission methods like fiber optics and the new temporal electronic commutation system."

New "Telematics" Services

The French government's decision to carry out the Telecom-1 program was made, Gerard Thery explains, "because of the importance that the DGT attaches to telematics, whether it is a question of 'domestic' telematics -- telecopiers for the general public, keyboard terminals using voice frequencies, and Videotex (an electronic directory) -- or 'professional' telematics, at the service of French businesses -- first the large companies, and then the small and medium-size businesses (PME) also."

The DGT has, in fact, undertaken the development of a large range of new services making extensive use of telematics: the Tourist Data Transmission Service (STT) which will give access to various seat reservation systems, which are now incompatible, from a single standard terminal; the SIMPLEXCOM service for the automation, processing, and transmission of all the documents concerning the shipment of merchandise in national or international commerce; the TELETEL videotex service for business or the general public; the TELETEX system for the interconnection of text-processing machines; and videotransmission, in preparation for the operation of the future French videotransmission network.

All these services can already be offered in a relatively satisfactory manner, by means of the existing ground-based networks, especially the Transpac network. But the DGT believes that "developments now under way enable us to predict that this will no longer be the case a few years from now, especially because of the need for high-speed transmission to increase the volume of data transmitted (required by fast telecopying, conference calls, videoconferences, etc.) and to reduce the delay in transmission (required by interconnected computers, data banks, bureaucratic affairs, etc.), as well as to increase the flexibility and security of the transmission and to extend access to the new services."

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Thus Telecom-1 will be the first French system of "telematics" satellites. It will make it possible, Gerard Thery said, "to respond to the legitimate demands of the general public and of businesses by offering considerable advantages with respect to flexibility of use and profitability."

The Telecom-1 Missions

The Telecom-1 system will have two principal tasks, the DGT announced: one is concerned with inter-business connections in France (this is the new one), and the other is the (classical) task of telephone and television transmission between the French mainland and the DOM [Overseas Departments] and TOM [Overseas Territories] -- with, in addition, the capability of transmitting the telephone traffic of the African countries.

The task of inter-business connections in mainland France and Corsica will make it possible to provide broad-band, high-speed digital connections (varying from a few kilobits per second to several megabits per second) at frequencies of 12-14 GHz between the various business sites -- for example, between headquarters and the branches or the factories. At the beginning, these will be "closed" circuits (between well-determined users). But, Gerard Thery said, the DGT is also considering access to other networks of the same kind later, or access to a general telecommunications network on the national or even European level.

High-speed digital connections will facilitate the development of new applications requiring a broad bandwidth: videoconferences, fast telecopying, transfer of files between computers in a very short time, etc.

The establishment of ground-based stations near the user will, moreover, make it possible to limit ground-based connections and junctions as much as possible, and thus to offer an especially reliable transmission system. In addition, multiple access (by time distribution -- AMRT) of a large number of ground-based stations to the same Telecom-1 satellite repeater will make it possible to increase the system's flexibility for its users: immediate, simultaneous access to all correspondents, nearly instantaneous modification of the capacity of the connections, establishment of temporary connections by means of mobile stations (for example, for unusual demonstrations, temporary relief of one computing center by another, etc.).

Telecom-1 will also be the ideal instrument for a data distribution service -- a single source broadcasting information to several receivers simultaneously -- for example, for teleprinting of newspapers, digital transmission of photographs in color, etc.

Finally, "the Telecom-1 satellite will free businesses from the geographical restrictions imposed by ground-based networks," the DGT announces, "because the company will be able to set up one of its units completely at will -- including sites that are difficult to reach or even impossible to service by conventional means (off-shore platforms, etc.) -- since a rate independent of the distance can be applied, as it already is for the Transpac network."

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"In general, the rate structure will be studied in detail," Gerard Thery said, "and the DGT thinks it will be able to offer the Telecom-1 services at markedly lower prices than those for two standard specialized connections, and with a much better quality of service, for all the previously mentioned reasons. Thus the users will pay a pro rata amount for the facilities they actually use."

Telecom-1's classical telecommunications task at 4-6 GHz will make it possible to carry telephone and television traffic between the mainland and the DOM and TOM. The connections will cover the French departments and territories in the Atlantic Ocean and the Indian Ocean: Guiana, Martinique, Guadeloupe, St Pierre and Miquelon, Reunion, and Mayotte. Thus for these connections, Telecom-1 will partially replace the service now provided by the satellites of the worldwide Intelsat network, the DGT announced. But Telecom-1 will not provide coverage for the departments and territories of the Pacific Ocean region, like Tahiti, which will continue to be served by the Intelsat satellites.

Moreover, Telecom-1 will make it possible to "carry the domestic telephone traffic in Africa, within the zones covered by the satellite," the DGT announced. This supplementary task of Telecom-1 should also take over part of the traffic carried up to now by the Intelsat satellites. Especially in certain countries, like Zaire, where France has furnished all the space telecommunications equipment, sometimes with French funds.

Extension of Telecom-1 to Europe

The director general for telecommunications said that he "considered it indispensable for the DGT to be able to expand the French system to the size of Europe, and for Telecom-1 to be the starting point for a new system of European satellites able to offer businesses located in Europe services similar to those that will be provided by the (competing) American systems, like the SBS system of the Satellite Business System company -- formed by IBM -- and the X-TEN system of the Xerox Corporation."

On this subject, Gerard Thery stated that "everything possible will be done to define the standards of service and the transmission agreements for the Telecom-1 system in close collaboration with the European postal and telecommunications agencies, in order to obtain this result."

The development of these satellite telematics systems thus requires "the establishment of a strong policy of standardization, coordinated on the international level, and not only on the national level," Herve Nora stated. "The standardization of equipment, networks, and services, and the agreements for access to these networks and services, is actually essential for the proper use of the facilities that have been set up," thinks Herve Nora. That is why it is demanded more and more strongly every day by users all over the world -- who are, moreover, perfectly aware that standardization is essential to make them independent of the manufacturers. In the absence of standards, the manufacturers can gain a de facto monopoly, because then they control all the factors in the development of equipment and applications. It is in this

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sense that Simon Nora and Alain Minc were able to speak of the satellite challenge in their report, and it is in this sense that Telecom-1 represents an essential tool for our national independence, Herve Nora concludes.

A Satellite in the Service of Business

What can the Telecom-1 system contribute to business? The question was raised at the Toulouse colloquium, and several businessmen gave their opinions.

According to Mr Kiefer of the ELF-Aquitaine group, Telecom-1 can be useful in creating self-adapting data networks linking many correspondents (data transmission), as well as in transmitting the group's internal correspondence (bureaucratic affairs) or working documents like geographical maps in color (high-resolution fast telecopying). Satellite connections will also introduce new factors in the discussions and the decision-making procedures within the company (videoconference), or even become an instrument of the command networks (videophones). The satellite will also make it possible to reach isolated correspondents, on off-shore platforms or distant prospecting sites, not only to make professional communications but also to improve the living conditions of the personnel in carrying private messages.

For Mr Meunier of the Renault company, the satellite should make it possible to develop interconnections between computers (telematics), reduce travel (teleconferences) and the number of documents exchanged among offices (telecopying), as well as to carry the company's mail (electronic postal service). The Renault company is also interested in the prospect of a European extension of the Telecom-1 system, especially in Belgium and Spain, as well as by access to other telematic networks.

The French Press Agency, one of the five great world press agencies, which has already been using satellite connections since 1971 (60 connections), is also counting on Telecom-1 to improve the reliability, transmission speed and coverage of this network, as well as for access to new services (Videotex, Transpac, etc.), said its representative, Mr Duregne.

In the name of the European Radio Broadcasting Union (UER), Mr Haas, who is chairman of the group responsible for satellites -- especially ECS -- considered that Telecom-1 could also be used to create video libraries for the public, to broadcast information programs in hotels, schools, and universities, or to broadcast wide-screen programs in theaters.

In general, the potential business users expressed a desire to see the Telecom-1 system extended beyond the boundaries of mainland France, by becoming compatible with the other space systems -- but TDF has remained very evasive concerning the prospects for compatibility between the French Telecom-1 system and the American SBS system, which will begin operating first, in 1981.

The businessmen also emphasized the necessity of guaranteeing the security and privacy of the transmission. Mr Lombard of TDF stated on this point that basic studies were under way to design satisfactory coding methods. For its

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part, the Rennes CCETT thinks it is ready to offer a coded sound service, and it is now undertaking studies to encode image broadcasting as well. One of the factors to be defined in this field is the amount of protected time that will be demanded by the users in order to prevent the decoding of a transmission.

Finally, it appeared that close cooperation between the DGT and the users was necessary to resolve, to the best of their common interests, the many questions that businesses must now face in preparing to use Telecom-1; these questions are concerned with rates, billing for services, the equipment to be installed by the user, the limits of the service provided by the DGT, the interfaces with existing equipment, etc.

Two 1-Ton Satellites Launched by Ariane

The Telecom-1 system will be produced in collaboration between the DGT and CNES, which have already prepared joint preliminary studies of the project. The mission will be defined by the DGT, which will also direct the program, in cooperation with CNES. The overseeing of the space part of the system will be entrusted to the French aerospace industry.

The system will consist of three satellites, including two satellites in orbit -- one in operation and one in "active" reserve -- and another satellite in reserve on the ground. The overall cost of the system -- around 1.5 billion francs at 1978 prices -- will be financed by the French Postal and Telecommunications Administration. The Telecom-1 system is scheduled to go into operation on 1 July 1983. The first satellite will be launched during the fourth quarter of 1982, and the second during the first quarter of 1983, according to the dates announced by the DGT.

The design of the Telecom-1 satellite, said the DGT, "deliberately excludes any large new test with respect to the platform or the payload: it will be a satellite of the ECS class." That would put the MATRA [Mechanics, Aviation, and Traction] Company in a good position to manufacture the Telecom-1 satellites, because of its experience with the European ECS satellites and their MARECS derivatives. Aerospatiale has also announced its intention of taking part in the competition to construct the Telecom-1 satellites, but with an original design for a "heavy," super-redundant satellite (cf. AIR & COSMOS No 756). But the representatives of the DGT and CNES have not yet specified whether there will be a call for proposals from industry for the manufacture of the Telecom-1 satellites. For its part, the Thomson-CSF [General Wireless] group is well placed to manufacture the payloads of the satellites (electronic telecommunications equipment), and Telspace will no doubt be asked to provide the principal ground-based stations.

The definition of the exact specifications of the Telecom-1 satellite will begin next April. For the time being, the DGT is planning on satellites weighing 1,020 kg on launch and 550 kg in geostationary orbit at an altitude of 36,000 km; they will be launched separately with the Ariane rocket, according to the procedure for double launches. The orbital position of the

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satellites (determined by the coverage at 4-6 GHz) will be 10° West, above the Gulf of Guinea, for the satellite in operation, and 7° West for the reserve satellite in orbit.

The Telecom-1 satellites will be stabilized about all three axes, with an accuracy of 0.1° for maintaining their position and pointing their beams. [They have an expected lifetime] of 7 years, and will be equipped with a solar generator having a power of 900 watts (consumption 600 W) and a passive thermal control system.

Twelve Repeaters

The payload for each satellite will include 12 repeaters: six 8.5-watt repeaters at 4-6 GHz for connections between the mainland and the DOM and TOM and connections with Africa, and six 20-watt repeaters at 12-14 GHz for inter-business connections and video broadcasting.

The six repeaters at 4-6 GHz will be divided among telephony (three repeaters) and TV (one repeater) with the DOM and TOM, and telephony in Africa (two repeaters); the connections will be made with a main station in mainland France, equipped with a large antenna 30 meters in diameter (Intelsat standard A -- G/T of 40.7 dB/K), and stations with antennas 12 meters in diameter (Intelsat standard B -- G/T of 31.7 dB/K) in the DOM and TOM.

The other six repeaters at 12-14 GHz -- using the reserved band at 12.5-12.75 GHz for descending connections -- will be divided among the inter-business digital data transmissions (five repeaters at 25 M Bits/s, in the analogue or digital mode). The inter-business connections will be made with small, simplified stations, having antennas 3 meters in diameter (G/T of 23.2 dB/K), installed directly at the users' sites.

By 1989, it is estimated that the traffic between France and the DOM and TOM will be 1,800 circuits, and the data transmission will be 125 M Bits/s.

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